BYSTROV, A.V.; KRASULINA, A.K.

Automatic hard facing of suction-type coal dredge parts. Avtom. svar. 18 no.10:60-62 O '65.   (MIRA 18:12)

1. Kuznetskiy metallurgicheskiy kombinat.

BYSTROV, A.V.; SHALIMOV, A.F.; SOLDATENKOV, G.A.

Electric slag welding of open-hearth furnace supports. Avtom.
svar. 17 no.10:67-68 O '64   (MIRA 18:1)

1. Kuznetskiy metallurgicheskiy kombinat.

BYSTROV, B.

The main thing., Sov.shakht. 10 no.9:27-28 S '61.
(MIRA 14:8)
1. Profgruporg Karagandinskoy shakhty No.38.
(Karaganda Basin—Coal miners)

BYSTROV, B.A.; PAVLOVA, A.P.

Respiration intensity of pumpkin seeds in connection with the quality of fertilization. Fiziol.rast.2 no.5:444-446 S-O '55.

(MLRA 9:2)

1.Plodoovoshchnoy institut imeni I.V.Michurina, Michurinsk.
   (Pumpkin seed) (Plants--Respiration)

Bystrov, B. A

USSR/General Biology, Genetics.   B-5

Abs Jour: Ref. Zh.-Biol., No 9, 1957, 35193

Author : Bystrov, B.A., Pavlova, A.P., Falkenburg, E.A.
Inst   :
Title   : The Quality of Fecundation and the Intensity of the Assimilation
          and Respiration Processes in Pumpkin and Sunflower Plants

Orig Pub: Fiziol. rasteniy, 1956, 3, No 3, 185-190

Abstract: The intensity of the respiration and photosynthesis of inbred
          plants of pumpkin and sunflower and mixed variety hybrids was
          studied. Pumpkins of the Mozolevskaya type and sunflowers of
          the Fuksink 10 type served in the capacity of the inbred plants,
          having multiplied by means of self fertilization in the course
          of several generations. Hybrids of pumpkins were gotten as the
          result of fertilizing plants of the Mozolevskaya type with a
          mixture of pollen taken from the Grey Volga and Astrakhan types.
          Hybrids of sunflower were gotten by fertilizing plants of the

Card   : 1/2   -2-

USSR/General Biology, Genetics.

B-5

Abs Jour: Ref. Zh.-Biol., No 9, 1957, 35193

Fuksink 10 type with the Chernianka 35 type. The hybrids of
both types in capacity of development surpassed the plants of the
inbred line. It was shown that the intensity of respiration was
higher in plants of the inbred line, and that photosynthesis was
higher in the hybrids. The excess of the photosynthesis of car-
bon over its expenditure during the respiration of hybrids was
expressed more strongly. The materials were not worked out bio-
metrically and it is therefore difficult to judge on their trust-
worthiness.

Plodoovoshchnoy institut imeni
I.V. Michurin, Michurinsk

Card   : 2/2

-3-

BYSTROV, B.A. [deceased]; PAVLOVA, A.P.

    Biochemical characteristics of seeds of inbred and hybrid
    pumpkin plants. Fiziol. rast. 11 no.6:1033-1037 N-D '64.
                            (MIRA 18:2)
    1. Michurin State Pedagogical Institute.

BEL'SKIY, B. E., inzhener; BYSTROV, B. M., inzhener, retsenzent; PIRSKIY, F. N.,
retsenzent; FEDOSOV, N. M., kandidat tekhnicheskikh nauk, retsenzent;
SHAPIRO, B. S., inzhener, retsenzent.

/Production of hot-rolled sheet steel7 Proizvodstvo goriachekatanogo
lista. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi
metallurgii, 1953. 582 p.   (MLRA 6:5)
                                                            (Sheet steel)

BYSTROV, B.M.

Work results of the Interfactory institute for the study of shaped-steel rolling mills in plants of the Main Administration of Quality Steel and Ferroalloys. Metallurg. no.4:35-37 Ap '56.   (MLRA 9:9)

1.Glavspetsstal' Ministerstva chernoy metallurgii SSSR.
            (Rolling mills)

Bystri, B.M.

IGNATENKO, Dmitriy Grigor'yevich; STAROSEL'SKIY, Anatoliy Lazarevich;
PERCHANIK, Vladimir Borisovich; BYSTROV, B.M., red.; GOLYATKINA,
A.G., red.izd-va; KARASEV, A.I., tekhn.red.

[Machinist-operator at the control post of a rolling mill; a
manual for the technical instruction of workers] Mashinist-
operator postov upravleniia prokatnogo stana; uchebnoe posobie
dlia proizvodstvenno-tekhnicheskogo obucheniia rabochikh. Moskva,
Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii,
1957. 246 p.   (MIRA 11:2)
        (Rolling mills)

BYSTROV B.N.

Name: BYSTROV, B. N.

Dissertation: Suboccipital anesthesia combined with intravenous chloral hydrate for horses; experimental and clinical investigation

Degree: Cand Vet Sci

Defended at:
Affiliation: Min Agriculture USSR, Kiev Veterinary Inst

Publication
~~Defense Date~~, Place: 1956, Kiev

Source: Knizhnaya Letopis', No 4, 1957

BYSTROV, B.N., aspirant.

Suboccipital anesthesia combined with intravenous chloral hydrate injection. Veterinariia 34 no.6:48-51 Je '57.   (MLRA 10:7)

1. Kiyevskiy veterinarnyy institut.
          (Anesthesia)   (Chloral)   (Veterinary physiology)

BYSTROV, Boris Petrovich, aspirant

Choice of dimensions and construction of the electrodes of unilateral capacitive transducers. Izv. vys. ucheb. zav.; elektromekh. 7 no.8:1003-1009 '64.

(MIRA 17:10)

1. Kafedra izmeritel'noy tekhniki Novocherkasskogo politekhnicheskogo instituta.

BYSTROV, Boris Petrovich, aspirant; GIKIS, Anton Feliksovich, kand. tekh. nauk, prof.

Continuously operating automatic device for telemetering small moisture contents of ribbon-type materials. Izv. vys. ucheb. zav.; elektromekh. 8 no.5:590-591 '65.   (MIRA 18:7)

1. Kafedra izmeritel'noy tekhniki Novocherkasskogo politekhnicheskogo instituta (for Bystrov). 2. Zaveduyushchiy kafedroy izmeritel'noy tekhniki Novocherkasskogo politekhnicheskogo instituta (for Gikis).

BYSTROV, Boris Petrovich, aspirant; LYUBUTIN, Oleg Savel'yevich, inzh.

Measurement of some parameters of sheet materials with variable thickness. Izv.vys.ucheb.zav.; elektromekh. 8 no.8:931-936 '65.
(MIRA 18:10)

1. Kafedra izmeritel'noy tekhniki Novocherkasskogo politekhnicheskogo instituta (for Bystrov).

BYSTROV, D. M.

BYSTROV, D.M.

[Mechanizers with extensive qualifications] Mekhanizatory shirokogo profilia. [Literaturnaia zapis' sdelana N. Platuninym i IU.Falate-vym. Moskva] Molodaia gvardiia, 1954. 37 p.   (MLRA 7:7)
        (Machine-tractor stations)

Bystrov, D S

51-5-6/11

AUTHORS: Fillimonov, V.N., Bystrov, D.S. and Terenin, A.N.

TITLE: Infra-red Spectra of Molecular Compounds with Metal Halides
(Infrakrasnye spektry molekulyarnykh soyedineniy s galogeni-
dami metallov)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr 5,
pp.480-493 (USSR).

ABSTRACT: Infra-red absorption spectra of molecular compounds, NO,
acetonitryl, pyridine, cyclohexane, acetone and methanol
with $AlBr_3$, $AlCl_3$ and $SnCl_4$ were investigated in the region
8000 to 700 cm^{-1}. The work was carried out on an infra-red
spectrometer of type ИКС-11 with prisms of LiF and NaCl and an
autocollimating spectral instrument of high dispersion using
glass prisms. Pronounced changes in the spectra of molecules
to which metallic halogens ($AlBr_3$, $AlCl_3$ and $SnCl_4$) become
attached, show that a donor-acceptor bond is established
between them. The frequency changes are quite pronounced
and form a direct evidence supporting the above hypothesis.
Detailed absorption curves of the substances and frequency

Card 1/2

51-5-6/11

Infra-red Spectra of Molecular Compounds with Metal Halides.

.   tables are given. There are 10 figures, 8 tables and 29 references, many of which are Slavic.

ASSOCIATION: Scientific and Research Institute of Physics of the Leningrad State University (Nauchno-issledovatel'skiy fizicheskiy institut, Leningradskogo gosudarstvennogo universiteta)

SUBMITTED: May 17, 1957.

AVAILABLE: Library of Congress.

Card 2/2

AUTHORS: Terenin, A. N., Filimonov, V. N.,   SOV/48-22-9-23/4o
             Bystrov, D. S.

TITLE: Infrared Absorption Spectra of Molecular Compounds of Metal
             Halides (Infrakrasnyye spektry pogloshcheniya molekulyar-
             nykh soyedineniy s galogenidami metallov)

ABSTRACT: This is an investigation of the infrared absorption spectra
             of the molecular compounds of NO, acetonitrile, pyridine,
             acetaldehyde, acetone, chloro acetyl ethyl acetate, di-
             ethyl ether, methanol and cyclohexane with $AlBr_3$, $AlCl_3$,
             $SnCl_4$ and some other metal halides. The majority of
             these molecular compounds was investigated in solid state.
             They were produced by the sorption of the vapors of
             organic compounds and of the gaseous NO which was
             sublimated through the halide layer. A description of
             the experimental method and part of the results were
Card 1/2   published already in reference 1. A somewhat more pronounced

Infrared Absorption Spectra of Molecular Compounds   SOV/48-22-9-23/4o
of Metal Halides

shift of the frequency indicates that these metal
halides possess better electron acceptor properties
than protonic acids. The modifications in the infrared
spectrum clearly indicate that the addition of metal
halides to organic molecules can lead to the same
modifications in these molecules as can the addition
of a proton. This means that the halides of Al,Sn, Ti and
Fe behave as strong acids even in the absence of the
respective hydrogen halides. There are 7 references,1 of
whioh is Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo
gos.universiteta im.A.A.Zhdanova (Scientific Research
Institute of Physios of the Leningrad State University
imeni A.A.Zhdanov)

Card 2/2

Bystrov, D.S.

FILIMONOV, V.N.; BYSTROV, D.S.

Spectral manifestations of the action of some aprotic catalysts.
Probl. kin. i kat. 10:291 '60.   (MIRA 14:5)

1. Fizicheskiy fakul'tet Leningradskogo gosudarstvennogo universiteta.
          (Catalysts—Spectra) (Halides)

S/051/60/009/004/007/034
E201/E191

AUTHORS: Bystrov, D.S., Sumarokova, T.N., and Filimonov, V.N.

TITLE: Infrared Absorption Spectra of Urea and Thiourea Complexes with Tin Chloride and Bromide

PERIODICAL: Optika i spektroskopiya, 1960, Vol 9, No 4, pp 460-466

TEXT: The authors studied the infrared absorption spectra of urea $(NH_2)_2CO$, its three complexes, $2(NH_2)_2CO \cdot SnCl_4$, $(NH_2)_2CO \cdot TiCl_4$ and $2(NH_2)_2CO \cdot SnBr_4$, of thiourea $(NH_2)_2CS$, and its two complexes, $2(NH_2)_2CS \cdot SnCl_4$ and $2(NH_2)_2CS \cdot SnBr_4$. The purpose of the investigation was to find where metal halides were attached to urea and thiourea molecules and to find the effect of such attachment on the attached molecules. The infrared spectra were recorded using a technique described earlier (Ref 5). Thin layers of complexes were prepared by sublimation in vacuum (Refs 1, 2) or by interaction of sublimated layers of urea or thiourea with appropriate vapours (the latter method was used only for $SnCl_4$).

Card 1/2

S/051/60/009/004/007/034
E201/E191

Infrared Absorption Spectra of Urea and Thiourea Complexes with Tin Chloride and Bromide

The spectra were found to be independent of the method of preparation; they were recorded with an infrared spectrometer ИКС-14 (IKS-14). The results for urea and its complexes are given in Tables 1 and 2 and Figs 1 and 2. The results for thiourea and its complexes are listed in Table 3 and shown in Fig 3. It was found that in urea complexes $SnCl_4$ and $TiCl_4$ were attached to oxygen, while $SnBr_4$ was attached to nitrogen. In thiourea complexes $SnCl_4$ and $SnBr_4$ were attached to sulphur.

Acknowledgements are made to A.N. Terenin who directed this work. There are 3 figures, 3 tables and 17 references: 4 Soviet, 5 English, 1 French, 1 Swiss, 2 translations into Russian and 4 from international journals.

SUBMITTED: January 12, 1960

Card 2/2

FILIMONOV, V.N.; BYSTROV, D.S.

Change in the vibrational frequencies of nitrogen-containing
compounds associated with a change in the orbital hybridization
of nitrogen in donor-acceptor interaction. Opt. i spektr. 12
no.1:66-72 Ja '62.

(MIRA 15:2)

(Quantum theory)
(Nitrogen)

BYSTROV, D.S.; NAZAROV, B.K.

Electron acceptor linkage of metal halides and carbonium ions.
Dokl. AN SSSR 148 no.6:1335-1338 F '63.   (MIRA 16:3)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo
gosudarstvennogo universiteta im. A.A. Zhdanova. Predstavleno
akademikom A.N.Tereninym.
(Halides) (Carbonium compounds) (Valence (Theoretical chemistry))

BYSTROV, D.S.

Infrared spectra of olefin complexes with aluminum halides. Dokl.
AN SSSR 149 no.4:872-875 Ap '63.   (MIRA 16:3)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo
universiteta im. A.A.Zhdanova. Predstavleno akademikom A.N.
Tereninym.
          (Olefins—Absorption spectra) (Aluminum halides)

BYSTROV, D.S.

Infrared spectra of esters in complexes with electron-acceptor metal halides. Part 1. Effect of α-substitution on the donor properties of the carbonyl group. Zhur.strukt.khim. 4 no.4:548-554 Jl-Ag '63.   (MIRA 16:9)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta.
              (Esters—Absorption spectra) (Complex compounds)
                     (Substitution (Chemistry))

BYSTROV, D.S.

Infrared spectra of ester complexes with electron-accepting
metal halides. Part 2. Zhur.strukt.khim. 4 no.5:691-697 S-O .
'63.   (MIRA 16:11)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo
gosudarstvennogo universiteta.

BYSTROV, D.S.

Transferability of the potential energy coefficients of
polyatomic molecules. Dokl. AN SSSR 153 no.6:1291-1294
D '63.   (MIRA 17:1)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningrad-
skogo gosudarstvennogo universiteta im. A.A. Zhdanova. Pred-
stavleno akademikom A.N. Tereninym.

BYSTROV, D.S.

Infrared spectra and structure of aromatic carbonium ions.
Dokl. AN SSSR 154 no.2:407-410 Ja'64.   (MIRA 17:2)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo
gosudarstvennogo universiteta im Zhdanova. Predstavleno
akademikom A.N. Tereninym.

L 49766-65   EPF(c)/EWT(m)/EWP(j)   Pc-4/Pr-4   RM
ACCESSION NR: AR5012252   UR/0058/65/000/003/D033/D033

SOURCE: Ref. zh. Fizika, Abs. 3D239

AUTHOR: Bystrov, D. S.

TITLE: Infrared spectra and structure of aromatic carbonic ions

CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR, vyp. 1, 1964, 241-249

TOPIC TAGS: infrared spectrum, aromatic compound, carbonic ion, vibrational
spectrum

TRANSLATION: Vibrational spectra of aromatic carbonic ions ArH_2^+ are obtained for
the first time (ArH - benzene, toluol, mesityline, hexamethyl benzene, naphthalene,
and anthracene). In the region of frequencies v_{CH} has been observed an intense ab-
sorption band of anomalously low frequency, $2740-2850$ cm^{-1}. The value of the fre-
quency of this band is proportional to the value of the ionization potential of the
hydrocarbon molecule. In the spectra of the ions obtained from benzene and toluol,
frequencies characteristic of the groupings C_6H_5 and para-C_6H_4 were observed in the

Card 1/2

L 49766-65
ACCESSION NR: AR5012252

1600--700 cm^{-1} region. The structure of the carbonic ions is discussed. See also
RZhFiz, 1964, 7D185.

SUB CODE: OP, OC   ENCL: 00

Card 2/2

BYSTROV, F., prof.

Present-day stage of foreign exchange crisis in capitalist countries.
Den. i kred. 21 no.3:75-85 Mr '63.   (MIRA 16:3)
          (Balance of payments) (Foreign exchange)

BYSTROV, F.

Commerce

Currency depreciation in the capitalistic countries and currency risks in foreign trade.
Vnesh.torg. No. 3, 1952

Monthly List of Russian Accessions, Library of Congress, June 1952. Unclassified.

BYSTROV, F., professor.

"South African gold and intensification of Anglo-American contra-
dictions." Z.S.Katsenellenbaum.Reviewed by F.Bystrov. Fin. SSSR
16 no.2:87-89 F '55.   (MLRA 8:1)
    (South Africa, Union of--Gold) (Katsenellenbaum, Zakharii
    Solomonovich, 1885-   ) (United States--Foreign relations--
    Great Britain)

BYSTROV, F   P   ED.

M/6
772
.B9

MEZHDUNARODNYE RASCHETY I VALYUTNYYE OTNOSHENIYA STRAN NARODNY DEMOKRATII

(INTERNATIONAL RATES AND CURRENCY RATES OF THE COUNTRIES OF THE PEOPLES' DEMOCRACIES)

POD. RED. F.P. BYSTROVA I B.S. LOPATINA.   MOSKVA, VNESHTORGIZDAT, 1956 .

126 P.   TABLES.

772	M/6
772	L/5
773.11	M/6
773.11	L/5

BYSTROV, F., professor.

Gold and currency clauses in foreign trade. Vnesh.torg. 27 no.3:
26-31 '57.

(Foreign exchange)

(MLRA 10:5)

BYSTROV, F.

Organization of the international payments of socialist countries.
Vop. ekon. no.2:112-119 F '60.
(Balance of payments)   (MIRA 13:1)

BYSTROV, F.; LOPATIN, G.

A book on the international economic relations of the U.S.S.R.
("International foreign exchange and credit relations of the
U.S.S.R." by A.M.Smirnov. Reviewed by F.Bystrov, G.Lopatin).
Vop.ekon.   no.8:143-145   Ag '60.   (MIRA 13:7)
        (Russia--Foreign economic relations)
                (Smirnov, A.M.)

BYSTROV, F., prof.

Influence of instability of currencies on international trade.
Vnesh.torg. 30 no.3:24-30 '60.   (MIRA 13:3)
            (Currency question) (Commerce)

BYSTROV, P.

BYSTROV, E., prof., doktor ekon. nauk

The rouble in international settlements. Vnesh.torg. 41 no.4:3-9
'60.   (MIRA 14:3)
                         (Foreign exchange)

BYSTROV, Fedor Petrovich, prof.; LYUBIMOV, Nikolay Nikolayevich, prof.; RUDCHENKO, A.M., red.; YERKHOVA, Ye.A., tekhn. red.

[Ruble and dollar] Rubl' i dollar. Moskva, Izd-vo in-ta mezhdunarodnykh otnoshenii, 1961. 38 p. (MIRA 14:10)
(Money)   (United States—Money)

BYSTROV, F., prof.

International credit relations of the U.S.S.R. Vnesh. torg.
41 no.9:3-9 '61.   (MIRA 14:8)
                        (Export credit)

BYSTROV, F., prof.

Promissory note in the international commercial turnover. Vnesh.
torg. 42 no.4:34-39 '62.   (MIRA 15:4)
                        (Drafts) (Export credit)

BYSTROV, F., prof.

Conditions of Soviet credit. Vnesh.torg. 42 no.7:39 '62.
(MIRA 15:7)
(Export credit)

IKONNIKOV,VУ., prof, Prinimali uchastiye: GUSAKOV, A.D., prof.; SHENGER,
Yu.Ye., prof.; BATYREV, V.M., doktor ekon. nauk; KAZANTSEV, A.I.,
dots.; BUZYREV, V.M., prof.; BYSTROV, F.P., prof.; NADEZHDINA, A.,
red.; POGODIN, Yu., red.; TELEGINA, T., tekhn. red.

[Monetary circulation and credit in the U.S.S.R.]Denezhnoe ob-
rashchenie i kredit SSSR. Kollektiv avtorov pod rukovodstvom
V.Ikonnikova. Moskva, Gosfinizdat, 1962. 470 p. (MIRA 16:1)
        (Money)   (Credit)

AFANAS'YEV, Anatoliy Aleksandrovich; BYSTROV, F.P., doktor ekonom. nauk,
    prof., otv. red.; POGODIN, Yu., red.; LEBEDEV, L., tekhn. red.

[The gold mining industry of capitalist countries; an economic
survey]Zolotodobyvaiushchaia promyshlennost' kapitalisticheskikh
stran; ekonomicheskii obzor. Moskva, Gosfinizdat, 1963. 61 p.
                                            (MIRA 16:3)
    (Gold mines and mining)

BYSTROV, Fedor Petrovich, prof.; ZINCHENKO, V.S., red.izd-va;
TSAGURIYA, G.M., tekhn. red.

[Foreign exchange provisions in international trade trans-
actions]Valiutnye uslovia sdelok v mezhdunarodnoi torgovle.
Moskva, Vneshtorgizdat, 1963. 154 p.   (MIRA 16:4)
        (Foreign exchange)   (Commerce)

TRUBENKOV, Vasiliy Il'ich; BYSTROV, F.P., prof., red.; BOROZDIN, B., red.; TELEGINA, T., tekhn. red.

[Foreign exchange operations in the U.S.S.R.] Valiutno-obmennye operatsii v SSSR. Predisl. i obshchaia red. F.P. Bystrova. Moskva, Gosfinizdat, 1963. 72 p.   (MIRA 16:6)
            (Foreign exchange)

CHIZHOV, Konstantin Yakovlevich; BYSTROV, F.P., doktor ekon. nauk,
    prof., red.; LARICHEV, G.M., red.izd-va; LEBEDEV,A.,
    tekhn. red.

[International foreign exchange and finance organizations
of capitalism] Mezhdunarodnye valiutno-finansovye organi-
zatsii kapitalizma. Moskva, Gosfinizdat, 1963. 222 p.
                                        (MIRA 17:1)

BYSTROV, F., prof.

Book on the problems of international foreign exchange.relations.
Fin. SSSR 37 no.10:91-95 0 '63.   (MIRA 17:2)

BYSTROV, G.

Work description in experimental production. Sots. trud 6
no.6:60-62 Je '61. (MIRA 16:8)

BYSTROV, G.A., Geroy Sotsialisticheskogo Truda

First results in carrying out of the technical directions for the
expansion of coal mining in the Kuznetsk Basin. Ugol' 35 no.8:5-8
Ag '60.   (MIRA 13:9)

1. Nachal'nik kombinata Kuzbassugol'.
        (Kuznetsk Basin--Coal mines and mining)

BYSTROV, G.A., Geroy Sotsialisticheskogo Truda.

Combined mining system with the use of flexible roof supports.
Ugol' 36 no.1:25-28 Ja '61.   (MIRA 14:1)
                    (Coal mines and mining)
                    (Mine timbering)

BYSTROV, G.A., Geroy Sotsialisticheskogo Truda

Over-all mechanization and automation of coal mines in the
R.S.F.S.R. Ugol' 37 no.6:1-4 Je '62.   (MIRA 15:7)

1. Nachal'nik Glavnogo upravleniya ugol'noy i slantsevoy
promyshlennosti Vserossiyskogo soveta narodnogo khozyaystva.
              (Coal mines and mining—Automation)
                 (Coal mining machinery)

BYSTROV, G.M.; SHAPIRO, I.P., red.; SHPAK, Ye.G., tekhn.red.

[Making rubber products for engineering uses with extruding
machines] Izgotovlenie rezino-tekhnicheskikh izdelii na
cherviachnykh pressakh. Moskva, Gos.nauchno-tekhn.izd-vo
khim.lit-ry, 1958. 45 p.   (MIRA 12:9)
     (Rubber goods)   (Rubber,machinery)

BYSTROV, G.M., assistent

Further improvement of the performance of automobile cardan drives. Izv.vys.ucheb.zav.; mashinostr. no.3:85-89 '59.
(MIRA 13:3)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni N.Ye.Baumana.
(Automobiles--Transmission devices)

BYSTROV, G.N.

Creep in molybdenum and chrome-molybdenum steels. I. Ya. Liberman and G. N. Bystrov. Kuchestvennaya Stal' 1935, No. 9, 41-6; Chem. Zentr. 1936, I, 4356.--A review is given of various methods of detg. creep stress and procedures used in the present work are described. Exptl. data are reported on the resistance to creep stress at 400° and 500° of a Mo steel contg. C 0.2, Mn 0.51, Si 0.31, S 0.014, P 0.015, Ni 0.41 and Mo 0.41% and a Cr-Mo steel contg. C 0.22, Mn 0.69, Si 0.31, S 0.01, P 0.008, Cr 0.93, Ni 0.43 and Mo 0.44%.   M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ACC NR: AP7004806   (N)   SOURCE CODE: UR/0413/67/000/001/0144/0144

INVENTOR: Vysokorodov, N. S.; Pavlov, M. P.; Tul'skiy, N. N.; Bystrov, G. N.

ORG: None

TITLE: A manually operated booster. Class 65, No. 190231

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1967, 144

TOPIC TAGS: water pump, ship component, marine equipment

ABSTRACT: This Author's Certificate introduces a manually operated booster designed principally for lifeboats. The unit includes a drive shaft located in a housing and driven by manual rockers through cranks. Fastened to the drive shaft is a bevel gear which interacts with a second bevel gear on the driven shaft. A control lever acts on dogs which pivot on axles in the housing. The installation is designed so that the drive may be stopped positively and smoothly at any moment of operation. Two clutch sections with oblique contacting faces are mounted on the drive shaft. One section is spring loaded and moves in the axial direction while the other is loosely mounted and has peripheral teeth for selective interaction with the rotating dogs.

Card 1/2

UDC: 629.125.2-514.4

ACC NR: AP7004806
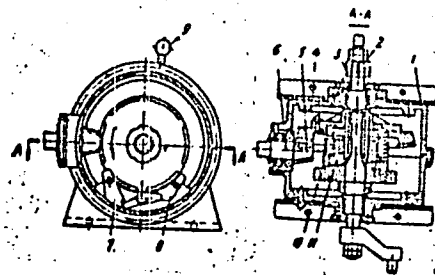
1--housing; 2--drive shaft; 3--cranks; 4 and 5--bevel gears; 6--driven shaft; 7 and 8--dogs; 9--lever; 10 and 11--clutch sections

SUB CODE: 13/ SUBM DATE: 24Mar65

Card 2/2

BYSTROV, G.P.   DECEASED   1963/4

MACHINERY   (1962)

Bystrov, I.

BYSTROV, I.

Birth of the tractor. Znan.sila 32 no.10:10-11 O '57.   (MIRA 10:11)
(Leningrad--Tractor industry--History)

BYSTROV, I.

Rural construction in the Virgin Territory. Zhil. stroi. no.8:
21-22 '62.

(MIRA 15:9)

1. Zaveduyushchiy otdelom stroitel'stva i stroitel'nykh materialov
TSelinnogo krayevogo komiteta Kommunisticheskoy partii
Kazakhstana.

(Virgin Territory--Construction industry)

BYSTROV, I.A.

Experience in the hydrological and hydrotechnical investigations
of a reservoir. Trudy VODGEO no.16:18-19 1964.

(MIRA 18:10)

BYSTROV, Il'ya Nikolayevich; KHRENOV, Ivan Yegorovich; SAYANOV, Vissarion, red.; ROZANOV, M.D., red.; LEVONEVSKAYA, L.G., tekhn.red.

[Labor's finest; work and life of a group in the Kirov (formerly Putilov) Factory] Gvardiia truda; trudy i dni kollektiva Kirovskogo (byvshego Putilovskogo) zavoda Lenizdat, 1959. 131 p. (MIRA 12:6)
    (Leningrad--Labor and laboring classes)

KHALEVIN, A.A.; VENETSKIY, V.N., uchitel'.; BYSTROV, I.V.; NIMENSKIY, I.P., uchitel'.

Organizing practical work in stockbreeding. Est.v shkole no.3: 75-80 My-Je '56.   (MLRA 9:8)

1. Zaveduyushchiy uchebnoy chastiyu shkoly (for Khalevin).
2. Metodist Smol'ninskogo rayonnogo otdela narodnogo obrazovaniya (for Bystrov).
              (Stock and stockbreeding--Study and teaching)

L 09905-66   EWT(m)/EPF(c)/EWP(j)   RM

ACCESSION NR: AP5016635   UR/0138/65/000/006/0019/0024
                                           678.046.2.002.2.001.4

AUTHORS: Zuyev, V. P.; Gilyazetdinov, L. P.; Gyul'misaryan, T. G.; Safronov, N.
Ya.; Verpahteyn, I. D.; Glagolev, V. I.; Tsygankova, E. I.; Sokolova, V. V.;
Bystrov, K. M.; Khokhlov, B. P.

TITLE: Some peculiarities of the production of carbon black PM 70 in cyclone-
type reactors by using thermocatalytic gas oil

SOURCE: Kauchuk i rezina, no. 6, 1965, 19-24

TOPIC TAGS: gas oil fraction, carbon black, catalytic cracking / PM 70 carbon
black

ABSTRACT: The production of active carbon black PM-70 from a 1:1 mixture of
thermocatalytic gas oil and green oil was investigated to correct certain tech-
nological parameters and to determine the behavior of carbon black during its re-
covery and processing. The tabulated physico-chemical properties of green oil,
and their mixture show that the thermocatalytic gas oil is distinguished by a high
polycyclic aromatic hydrocarbon content. The analysis of several gas oil frac-
tions showed that its kinematic viscosity at 50C varies over a range of

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L 0905-66

ACCESSION NR: AP5016635

9.5-11.8 x 10^{-2} m^2/sec. The viscosity of the 1:1 mixture varies from 3.6 to 3.9 x 10^{-2} m^2/sec. The kinematic viscosity plotted against heating temperature shows that the green oil and gas oil have the same viscosity only at a temperature of 280-300C. The viscosity value of 1.05 x 10^{-2} m^2/sec is reached for green oil only at 100C, and for gas oil and green oil mixture at 140C. Pure gas oil has this viscosity at 185C. The high viscosity, high boiling point, and the wide fractional composition of the gas oil make it necessary to preheat it by 80-100C higher than the green oil at minimum 160C before its introduction into the re- actors. The average diameter of the droplet of raw material is plotted against the vaporizing air flow rate and the temperature before the atomizer. With an increase in the air flow rate from 0.45 to 1.0 m^3/kg, the diameter of the droplet decreased 2.0-2.2 times. During the experiments the gas oil content in the mix- ture, the heating temperature, and the specific flow rate of vaporizing air were varied. The other technological parameters were almost constant (total specific air flow rate of 4.8-5.1 m^3/kg, gas flow rate of 0.25-0.28 m^3/kg of raw material, reactor temperature of 1395-1400C). Tabulated data show that by increasing the air flow rate and temperature the specific surface and the oil content of carbon black were increased, while the optical density of the benzene extract of carbon black decreased. The technological data and properties of carbon black PM-70

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L00905-66

ACCESSION NR: AP5016635

2

are tabulated and discussed. It was established that the carbon black yield is almost the same as that obtained from pure green oil. The thermophysical properties of the gaseous reaction products of carbon black formation are compared. Vulcanizates obtained with PM-70 carbon black have a higher tear strength due to the larger specific surface and oil content. Experimental data show that a carbon black plant equipped with cyclone-type reactors and a dry system of carbon black recovery can be altered to use a mixture of gas oil and green oil. An increase in the vaporizing air flow rate leads to an increased dispersal and oil content of PM-70 carbon black and to the decrease in coking of reactors. It is recommended to increase the air flow rate to 1.0 m^3/kg oil. The addition of gas oil to green oil results in the stabilization of the granulation operation on the ASA 1 drums. Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute for the Tire Industry); Novo-Yaroslavskiy sashevyy zavod (Novo-Yaroslavl Carbon Black Plant)

SUBMITTED: 00   ENCL: 00   SUB CODE: FP, OC

NO REF SOV: 005   OTHER: 001

Card 3/3 AP

L 12807-66   EWT(m)/EWP(j)/EWP(t)/EWP(b)   IJP(c)   JD/RM

ACC NR: AP5028680   SOURCE CODE: UR/0318/65/000/011/0025/0028

AUTHOR: Gyul'misaryan, T. G.; Gilyazetdinov, L. P.; Aksenova, E. I.; Shmeleva, 39
R. I.; Khokhlov, B. P.; Bystrov, K. M.; Sokolova, V. V.; Sinyakina, A. V.; Abayeva, B
B. T.; Okinshevich, N. A.

ORG: NIIShP; VNIINP: Novo-Yaroslavl Carbon Black Plant (Novo-Yaroslavskiy sazhevyy
zavod); Volgograd Carbon Black Plant (Volgogradskiy sazhevyy zavod); Scientific
Research Technological Design Institute (Nauchno-issledovatel'skiy konstruktorno-
tekhnologicheskiy institut)

TITLE: Industrial tests of new types of petroleum stock in the production of
activated PM-70 furnace black

SOURCE: Neftepererabotka i neftekhimiya, no. 11, 1965, 25-28

TOPIC TAGS: activated carbon, petroleum product, gas oil fraction, phenol

ABSTRACT: In order to confirm and develop the results of earlier studies which
indicated that catalytic and thermal gas oil could be used in the production of
activated furnace black, experimental batches of initial sulfur and hydrofined
phenol extracts of catalytic and thermal gas oil were produced. The physicochemical
characteristics of the new types of petroleum stock are compared with those of
green oil; in the degree of aromatization they are identical, but in fractional
composition, molecular weight, and viscosity, green oil is slightly lighter. In-
dustrial tests confirmed that hydrofined phenol extracts of catalytic gas oil, the
Card 1/2   UDC: 66.095.21:547.21.001.5

L 12807-66

ACC NR: AP5028680

initial sulfur-containing phenol extract of catalytic gas oil, and also mixtures of thermal gas oil and green oil (in the ratio of 60:40) can be used in the production of activated PM-70 furnace black in plants equipped with cyclone reactors, a dry system being used for trapping the black. Orig. art. has: 2 figures and 3 tables.

SUB CODE: 07 / SUBM DATE: none / ORIG REF: 006

jw
Card 2/2

BYSTROV, K. N. Cand Phys-Math Sci --(diss) "On the problem of the movement of liquids in curved layers of variable thickness." Mos, 1956. 9 pp 21 cm. (Min of Education RSFSR. Moskovskaya Oblast Ped Inst). (KL, 13-57, 97)

-5-

S/044/61/000/011/015/049
C111/C444

AUTHOR: Bystrov, K. N.

TITLE: On flows in curved layers with isothermic rule of the change of thickness

PERIODICAL: Referativnyy zhurnal, Matematika, no. 11, 1961, 37, abstract 11B184.(Uch. zap. Mosk. obl. ped. in-ta, 1959, 75, 11 - 29)

TEXT: Considered are the flows of an ideal incompressible liquid in curved layers with variable thickness. The system of equations which combines the velocity potential $\varphi(x, y)$ and the stream function $\psi(x, y)$, x and y being curvilinear isothermic coordinates, the author takes from the paper of O. V. Golubeva (Uch. zap. Mosk. obl. ped. in-ta, 1956, 43, Tr. Kafedry fiziki, vyp. 3):

$$\frac{\partial \varphi}{\partial x} = \frac{1}{p} \frac{\partial \psi}{\partial y}; \qquad \frac{\partial \varphi}{\partial y} = -\frac{1}{p} \frac{\partial \psi}{\partial x}. \qquad (1)$$

Here $p(x, y)$ is the thickness of the liquid layer, of which in the article one assumes that it only depends on the harmonic function $\beta(x, y)$. The curves $p(x, y) = $ const. form an isothermic curve family, and if one choses the convenient coordinate system the equations (1)

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On flows in curved layers...   S/044/61/000/011/015/049
                                            C111/C444

can be brought into a form where p only depends on one coordinate y.
Some methods for the construction of plane flows by aid of complex
functions are generalised to the case of a layer with variable thick-
ness, flowing on a plane. In this case one uses the notions of Σ-
differentiation and of Σ- integration (Vers L; Gebart A., Proc.,
Amer. math. Soc., 1954, 52, no. 1) The formula

$$\int_S \omega'(z)\, dz = \int_S \left[\varphi dx - \frac{1}{p(y)} \psi dy \right] + i \int_S \left[\psi dx + \varphi_c\ (y)\ dy \right]$$

defines the Σ-integration on the curve S. By Σ-integration of a
constant quantity one determines currents which have been caused by
springs, sinkings, and dipoles. A function analogous to the complex
velocity is introduced by aid of the Σ-differentiation.

[Abstracter's note: Complete translation.]

Card 2/2

24.4300

32462

S/044/61/000/010/026/051
C111/C222

AUTHOR: Bystrov, K.N.

TITLE: On two-dimensional stationary flows of a fluid in a layer
             with an exponentially variable thickness

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1961, 54,
             abstract 10 B 244. ("Uch. zap. Mosk. obl. ped. in-ta", 1959,
                                  75, 31-59)

TEXT: The author investigates the flows of the ideal incompressible
fluid in a thin layer situated on the plane. The thickness of the layer
is $p(y) = e^{-2\mu y}$. The velocity potential φ and the flow function ψ
satisfy the equations

$$\frac{\partial \varphi}{\partial x} = e^{-2\mu y} \frac{\partial \psi}{\partial y} ; \quad \frac{\partial \varphi}{\partial y} = - e^{-2\mu y} \frac{\partial \psi}{\partial x} .$$

Herefrom it follows that the functions

$$\Delta \varphi_x - \mu^2 \varphi_x = 0 \quad \text{and} \quad \Delta \psi_x - \mu^2 \psi_x = 0 .$$

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32462

On two-dimensional stationary   ...   S/044/61/000/010/026/051
C111/C222

The author determines solutions of these equations which give the
velocity potentials and flow functions of the sources, whirls and dipoles
for which the flow lines and equipotential lines are investigated in
detail. The author considers flows in an angle and the flow around a
circular cylinder with and without a circulation. The author describes
an application of the obtained formulas to the stationary two-dimensional
filtration with an exponentially variable filtration coefficient.

[Abstracter's note : Complete translation.]

Card 2/2

KARYAKIN, Rudol'f Nikolayevich; BYSTROV, K.N., red.; OVSYANNIKOVA, Z.G.,
     red. izd-va; PAVLOVA, V.A., tekhn. red.

     [Resonance in traction networks and its damping] Rezonans v tiago-
     vykh setiakh i ego dempfirovanie. Moskva, Gos. izd-vo "Vysshaia
     shkola," 1961.   229 p.   (MIRA 14:10)
                    (Electric railroads—Substations)

43144

S/124/62/000/008/004/030
I006/I242

2f.1200

AUTHOR: Bystrov, K.N.

TITLE: Propagation of sound waves in bent layers of
            variable thickness

PERIODICAL: Referativnyy zhurnal, Mekhanika, no.8, 1962, 20-21,
            abstract 8B212. (Uch. zap. Mosk.obl. ped. in-ta, v.99,
            1961, 51-57)

TEXT: The wave equation is obtained for the case of sound-
wave propagation in thin bent layers of variable thickness. Similar
problems may appear in the investigation of cases relating to the
propagation of sound waves in the atmosphere or in the hydrosphere
of the Earth. It is assumed that a non-viscous weakly compressible

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S/124/62/000/008/004/030
I006/I242

Propagation of sound waves...

barotropic fluid fills in the layer, which is bounded on top and
bottom by given curvilinear surfaces. Density waves in the fluid
are considered. In the case of a sufficiently thin layer, the
thickness being a given function of curvilinear orthogonal coordi-
nates q_1 and q_2 on the curvilinear surface at its base, the prob-
lem may be considered as two-dimensional. In this case the fluid
density ρ, hence also the condensation s, are the unknown func-
tions of the curvilinear coordinates q_1 and q_2, as well as of time
t. With these assumptions the following wave equation is obtained for
the condensation s: $\frac{1}{a^2}\frac{\partial^2 s}{\partial t^2} = \Phi(s)$ $a^2 = \left(\frac{dp}{d\rho}\right)_{\rho=\rho_0}$.   For the
velocity potential φ a similar wave equation is obtained :
$\frac{1}{a^2}\frac{\partial^2 \varphi}{\partial t^2} = \Phi(\varphi)$.   An isothermal coordinate net x and y is
chosen on the curvilinear surface at the layer base. From the

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S/124/62/000/008/004/030
I006, I242

Propagation of sound waves...

hydrodynamic point of view such a choice means a transition from
the layer having at its base a curvilinear surface to a layer
having a plane base, using a conformal transformation. The wave
equation for the velocity potential (or the condensation) will then
take the form

$$\frac{\partial}{\partial x}\left[p^{*}(x,y)\frac{\partial \varphi}{\partial x}\right] + \frac{\partial}{\partial y}\left[p^{*}(x,y)\frac{\partial \varphi}{\partial y}\right] = \frac{1}{a^{2}}\frac{\partial^{2}\varphi}{\partial t^{2}}$$

and the stationary wave equation will be given by:

$$\frac{\partial}{\partial x}\left[p^{*}(x,y)\frac{\partial \varphi_{i}}{\partial x}\right] + \frac{\partial}{\partial y}\left[p^{*}(x,y)\frac{\partial \varphi_{i}}{\partial y}\right] + \left(\frac{\lambda}{a}\right)^{2}\varphi_{i} = 0 .$$

[Abstracter's note: Complete translation.]

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L 00572-66 EWP(m)/EWT(l)/ETC(m)/EWA(d)/EWA(l) WW

ACCESSION NR: AR5019359 UR/0124/65/000/007/B058/B058

SOURCE: Ref. zh. Mekhanika, Abs. 7B415

AUTHOR: Bystrov, K. N.

TITLE: The complex form of equations describing the motion of fluid in curvilinear layers of varying depth

CITED SOURCE: Uch. zap. Mosk. obl. ped. in-ta, v. 142, 1964, 3-12

TOPIC TAGS: fluid motion equation, ideal incompressible fluid, curvilinear layer, variable depth layer, equation system transformation

TRANSLATION: Equations for the motion of an ideal incompressible fluid in curvilinear layers of variable depth, formulated by O. V. Golubeva (Uch. zap. Mosk. Obl. ped. inst., 1955, 33, 15-23; RZhMekh, 1956, No. 6, 3572), are transformed into an equation system of elliptical character by introducing isothermal coordinates. This facilitates the employment of a generalized function approach. Concrete applications are not discussed. Bibl. with 5 titles. I. M. Belen'kiy

SUB CODE: ME, MA   ENCL: 00

Card 1/1

Bystrov, L.N.

IVANOV, L.I.; BYSTROV, L.N.

Ustanovka dlya vysokotemperaturnogo issledovaniya polzuchesti metallov v vakuume ili inertnoy atmosfere.

report submitted for the 5th Physical Chemical Conference on Steel Production.

Moscow - 30 Jun 60

MATVEYEVA, M.P.; IVANOV, L.I.; BYSTROV, L.N.

Connection between thermodynamic values and the strength of alloys
at high temperatures. Issl. po zharopr. splav. 3:50-55 ' 58.
(MIRA 11:11)

(Metals at high temperatures) (Alloys--Thermal properties)
(Crystal lattices)

Bystrov, L.N.

18(7)

PHASE I BOOK EXPLOITATION   SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po
problems zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-re-
sistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p.
Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva;
Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov,
Academician: N. V. Ageyev; Corresponding Member, USSR Academy of
Sciences; I. A. Oding; I. M. Pavlov, and I. P. Zudin, Candidate
of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with
the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various
problems in the structural metallurgy of heat-resistant alloys.
Some are concerned with the theoretical principles, some with des-
criptions of new equipment and methods, others with properties
of specific materials. Various phenomena occurring under
specified conditions are studied and reported on. For details,
see Table of Contents. The articles are accompanied by a num-
ber of references, both Soviet and non-Soviet.

SOV/3355

Studies (Cont.)

Bystrov, L. M., and L. I. Ivanov, Device for Measuring the
Creep Property of Metals and Alloys at High Temperatures   375

Rudnitskiy, A. A. Precious Metal Thermocouples for Measure-
ment of High Temperatures   380

Osipov, V. G. State of Stress in the Deformation of Round
Blanks   385

Mekhed, G. N. Determination of the Resistance of Metals and
Alloys to Deformation at High Temperatures   392

AVAILABLE: Library of Congress

Card 12/12

VK/os
4/12/60

/8. 8200

67830
SOV/180-59-6-6/31

AUTHORS: Bystrov, L.N., Ivanov, L.I., and Prokoshkin, D.A.
            (Moscow)

TITLE: Investigation of High Temperature Creep of Iron by the
            Torsion Method

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
            nauk, Metallurgiya i toplivo, 1959, Nr 6, pp 37-42 (USSR)

ABSTRACT: It is a well known fact that the rate of creep is
            temperature-dependent and that this relationship can be
            described by a general formula

$$u = k e \exp{-Q/RT} \qquad (1)$$

            where: u is rate of creep; k is structure-sensitive,
            pre-exponential factor whose magnitude is greatly
            affected by the structure of the alloy; T is absolute
            temperature; Q is a parameter characterizing the energy
            of the process, the magnitude of which has been
            postulated to depend on the temperature and on the
            magnitude and character of the applied stress. Since
            various conclusions on the character of the temperature
            and stress dependence of Q had been reached by various
            workers who had studied creep of specimens in tension,
            the present investigation was undertaken with the object

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6.830
SOV/180-59-6-6/31

Investigation of High Temperature Creep of Iron by the Torsion
Method   of determining the relationship between Q, temperature
and stress, by studing creep of iron subjected to pure
shear stress. The experiments were carried out in a
specially designed vacuum apparatus, shown diagrammati-
cally in Fig 1. The test piece (1), in the form of a
cylinder of 2 - 3 mm diameter, 14 mm gauge length, with
square cross section ends, was held by two molybdenum
grips (2 and 3); the grip (2) was free to rotate and
carried a lever (4) with a weight (5) which generated
the moment M; the weight of the lever was compensated
by a counterweight (6); the grip (2) rotated on ball
bearings (7) supported by a water-cooled housing
and coated with silver or MoS_2; the grip on the
right-hand side was connected to an electric motor
through a worm reducing gear. Departure of lever (4)
from its original, horizontal position, resulted in
breaking the contact (9), connected with a low inertia,
electronic relay which switched on the electric motor,
rotating at a rate u in the direction opposite to that
in which the creep specimen rotated (at a rate u_1)
under the action of the applied torque. Depending upon

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Investigation of High Temperature Creep of Iron by the Torsion Method

the relative values of u and u_1, the engine was switched off and on by means of contacts (9) and (10), so that the specimen was deformed under the condition of constant torque; contact (11) served to switch off the complete apparatus after rupture of the specimen. A typical creep curve of γ-iron, tested at 1100-1180 °C, under M = 0.88 kg cm, is reproduced in Fig 2, where the deformation, indicated on the ordinate axis in multiples of 360°, is plotted against time (min), I representing the primary creep stage, II and III the secondary stage at 1100 and 1180 °C respectively, and IV the third stage of creep. The test pieces were prepared from two types of electrolytic iron (for chemical analysis see Table 1), re-melted in vacuum and forged; each test piece was annealed at 1260 °C for 30 min. To eliminate the effect of the possible difference between the properties of test pieces of the same nominal composition on the experimental results, the creep rates at various temperatures were determined on one and the same test piece; the accuracy of the obtained data was confirmed

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Investigation of High Temperature Creep of Iron by the Torsion
Method

by good agreement between the results obtained on heating
and cooling. The results of the first series of
experiments are reproduced in Fig 3, where the rate of
the secondary creep (u, $^\circ$/sec) of iron (type 1) is
plotted against temperature ($^\circ$C). It will be seen that
in the α-Fe range, u increased exponentially with
rising temperature, reaching a maximum at approximately
910 $^\circ$C; at higher temperatures u gradually decreased,
reaching a minimum at approximately 1050 $^\circ$C.   The
general character of this relationship remained the same
when larger torques were applied, although in these
cases the minimum value of u was reached at different
temperatures. The absence of a sharp drop in the rate
of creep at the temperature of the $\alpha \rightarrow \gamma$ transfor-
mation was attributed to strain-hardening, associated
with the volume changes accompanying the change of the
crystal lattice from body-centred to face-centred. The
temperature dependence of the rate of creep of γ-Fe at
temperatures above 1040 $^\circ$C (which has been found to
follow the law described by Eq (1), is illustrated

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Investigation of High Temperature Creep of Iron by the Torsion Method

graphically in Fig 4 in the form of log u versus $1/T \times 10^4$ curves, plotted for specimens listed in Table 2 under the following headings: number of the specimen; torque (M, kg-cm); type of iron; activation energy for creep (Q, kcal/g-atom); diameter of the specimen (d, mm); τ_S - maximum tangential stress, calculated from Eq (2) (kg/cm^2). Metallographic examination of specimens that had been subjected to deformation at 1100 °C showed the presence of cracks and pores (Fig 5); the density of these defects was particularly high in the surface layer of the specimen near the fracture region (Fig 5t). The formation of these defects was attributed by the authors to the generation and movement of excess vacancies; owing to the complex distribution of stress in the cross-section of the specimen strained in torsion, the density of the excess vacancies was not uniform, increasing with increasing distance from the axis of the specimen. Since it can be postulated that creep is determined by the processes of self-diffusion and formation of excess

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SOV/180-59-6-6/31

Investigation of High Temperature Creep of Iron by the Torsion
Method

vacancies, the activation energy for creep should be
equal to the sum of activation energies for these two
processes, and such in fact was found to be the case.
Thus, the results obtained by the authors show that the
activation energy, Q, for creep of γ-Fe (within the
investigated temperature and applied stress range) does
not depend on the temperature and is equal 95.2 kcal/g-
atom. The absolute value of Q is the same as that of
the heat of evaporation of iron; in its physical sense,
however, Q is most probably determined by the
processes of self-diffusion and formation of excess
vacancies, this view being supported by the presence of
cracks and pores, formed in the course of deformation.
Since it has been shown (Ref 17) that in the case of
many metals, the activation energy of fracture under low
applied stresses is also equal to the sum of the
activation energies for self-diffusion and formation of
excess vacancies, the present authors concluded that the

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phenomena taking place in a specimen stressed in torsion
are similar to those that occur during rupture due to
small tensile stresses.

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SOV/180-59-6-6/31

Investigation of High Temperature Creep of Iron by the Torsion
Method

There are 5 figures, 2 tables and 17 references, of
which 10 are Soviet and 7 English.

SUBMITTED: May 29 , 1959

Card 7/7

S/124/62/000/006/022/023
D234/D308

AUTHORS: Ivanov, L. I. and Bystrov, L. N.

TITLE: Investigating creep of metals by torsion method in
             the domain of polymorphic transformations

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 6, 1962, 59, ab-
             stract 6V518 (V sb. Fiz.-khim. osnovy proizvodstva .
             stali, M., AN SSSR, 1961, 331-336)

TEXT: An installation has been designed for investigating the
creep of metals in vacuum during torsion with a constant torque.
For determining the temperature dependence of the velocity of sta-
bilized creep, a cyclical testing method was used, in which the
creep velocity from a given torque and at different temperatures
is determined on a single specimen. It was found that for high
purity Fe the increase of temperature from 1100 to 1180°C does not
change the character of the process, but leads to a corresponding
increase of the creep velocity. Failure begins at the surface and
spreads gradually to the center of the specimen. In the domain of

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Investigating creep of ...

S/124/62/000/006/022/023
D234/D308

polymorphic transformation during heating the creep velocity pas-
ses through a maximum, the velocity for the γ- phase being smaller
than that for the α phase. During transition from the γ' phase to
the δ phase a sharp increase of the creep velocity is observed
(3.6, 0.209, 0.086, 0.0154 degrees per second at respective tem-
peratures of 1380, 1375, 1370, 1360°C). The results obtained are
related to the fact that for a modification with a more perfect
face-centered crystal lattice (γ phase) the creep velocity must be
smaller than that for modifications with the less perfect body-
centered lattice (α and δ phases). Some lack of sharpness in the
transition is connected with the fact that the transition from one
modification to another has a static character. This leads to ap-
pearance of zones with metastable structure at the temperature in
question, in the vicinity of the point of polymorphic transforma-
tion. Presence of admixtures and excess vacancies appearing dur-
ing deformation increases the probability of appearance of such
zones. /¯Abstracter's note: Complete translation._7

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34545
S/659/61/007/000/034/044
D205/D303

AUTHORS: Bystrov, L.N., and Ivanov, L.T.

TITLE: Installation ИМЭТ-4К (IMET-4K) for investigating
             metal creep at torsion

SOURCE: Akademiya nauk SSSR. Institut metallurgii. Issledova-
             niya po zharoprochnym splavam, v. 7, 1961, 286 - 288

TEXT: The apparatus is designed for investigating metal creep on
torsion of samples 2 - 3 mm in diameter and 10 - 15 working length.
The samples were fastened by square heads 4 x 4 mm, welded to its
ends. The tests were carried out in vacuum (10^{-3} - 10^{-4} mm Hg) at
a constant torsion moment up to a maximum of 5 kg x cm. Temperatu-
res of up to 1600°C could be employed and were recorded by an elec-
tronic potentiometer ЭПД-17 (EPD-17) while the deformation was au-
tomatically recorded by a ЭПП-09 (EPP-09) potentiometer. The con-
trolling system to maintain the constant torsion moment was an elec-
tronic continuous one which is an improvement on a previous model
by the same authors where an intermittent relay control system was

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Installation ИМЭТ -4K (IMET-4K) ...   S/659/61/007/000/034/044
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used. This made the apparatus more accurate by removing extraneous
dynamic loads on the sample during the on-off switching of the pre-
vious control system. Diagrams of the apparatus and the circuit of
the control system are given and their functioning is discussed in
detail. There are 2 figures and 1 Soviet-bloc reference.

X

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S/180/62/000/005/011/011
E193/E383

AUTHORS: Bystrov, L.N., Ivanov, L.I. and Prokoshkin, D.A.
            (Moscow)

TITLE: Creep of copper and copper-nickel alloys in torsion

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye
            tekhnicheskikh nauk. Metallurgiya i toplivo,
            no. 5, 1962, 197 - 209

TEXT: The paper reports the results of an investigation on creep of copper and copper-nickel alloys with 0.5, 1.0, 10, 20 and 30% Ni. Cylindrical test pieces were machined from vacuum-melted, forged and then cold-rolled materials. Torsion creep tests were conducted at 450 - 1 100 $^\circ$C under stresses ranging from 3.94×10^7 to 27.2×10^7 dynes/cm^2. Each test piece was given a 20-min anneal at 1 050 $^\circ$C before the tests. The results obtained for copper are reproduced in Fig. 1, where $\log(\dot{\varepsilon} T \mu^{3.5})$ is plotted against $1/T.10^4$, curves 1-6 relating to tests conducted under stresses of 1 - 40 kg/cm^2, 2 - 65, 3 - 89, 4 - 133, 5 - 205, 6 - 276 ($\dot{\varepsilon}$ is the creep rate, deg/sec,

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Creep of copper ....

μ is the elastic modulus, dynes/cm^2 and T is temperature, $^\circ$K).
It will be seen that at rates of creep exceeding a certain
critical value, $\dot\varepsilon \sim 10^{-3}$ deg/sec, the experimental points form
straight lines, the slope of which is practically independent of
the applied stress, giving the activation energy for creep of
copper equal to 46.9 $\pm$ 3.3 kcal/mole, which is very near to the
value of the activation energy for self-diffusion of copper.
The stress dependence of the rate of creep was found to be
$\dot\varepsilon \sim \tau^{6.52}$. Below the critical value of $\dot\varepsilon$ the experimental
points in Fig. 1 deviated from the linear relationship to an
extent which increased with decreasing stress. Creep curves
[deformation (ε, deg) versus time$_2$(t, min)] for copper specimens
tested under a stress of 40 kg/cm^2 at 940 $^\circ$C (graph a) and
870 $^\circ$C (graph 6) are reproduced in Fig. 3. It will be seen that,
in this case, the rate of creep under conditions of constant
temperature and stress does not remain constant but periodically
increases in a step-like fashion. Metallographic examination
of copper specimens at various stages of creep under various
conditions showed that this effect was not associated with
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Creep of copper ....

S/180/62/000/005/011/011
E193/E383

grain-boundary slide. The departure of the $\log(\varepsilon T \mu^{3.5})$ versus $1/T \times 10^4$ relationship from linear was also observed in the case of copper-nickel alloys containing less than 10% nickel; the effect was confined to test pieces tested under low stresses. A large part of the present paper is concerned with the physical meaning of the step-like change in the rate of creep mentioned above, which is associated with the departure of the $\log(\varepsilon T \mu^{3.5})$ versus $1/T \times 10^4$ relationship from linearity. The following explanation was postulated: the field of stress of dislocations piled up against the grain boundaries will increase with increasing deformation in proportion to the number of these dislocations. The field acts, on the one hand, on the Frank-Reed sources, reducing the number of dislocation loops generated and, on the other hand, exerts ever increasing pressure on the boundary dislocation walls. When this pressure exceeds a certain critical value, a void can be formed at the grain boundary, into which the dislocation pile-ups can be discharged. As a result, the field of stress suppressing the activity of the Frank-Reed sources disappears and the rate of creep sharply increases.
Card 3/3

AUTHORS   Bystrov, L. N., Ivanov, L. I. and Surova, E. A.

TITLE: Investigation of creep in α-iron by a torsion method

SOURCE·   Akademiya nauk SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam. v. 9. 1962. Materialy Nauchnoy sessii po zharoprochnym splavam (1961 g.), 72–81

TEXT: Ideas on the nature of the activation energy of creep and its dependence on stress and temperature are contradictory. The present investigation was conducted in a vacuum for a temperature range from 630° to 900°C. For stresses from 40 to 138 kg/cm² the activation energy of creep is practically independent of stress, and on the average is equal to 77.7 Ckal/g at.. Within the above limits of stress and temperature, the creep of the α-iron is believed to be due to dislocation movements, the activation energy of which is equal to the sum of the activation energies of self-diffusion and to the energy of formation of edge dislocations. When the applied stresses are increased up to 439 kg/cm², the energy of activation drops sharply to 50Kcal/g at. No relationship was found between the temperature and the energy of activation within the limits of stress investigated. A calculation was made of the distribution of torsional stresses throughout the section of the samples under conditions of creep. In the following discussion, A. Ya. Shinyaev reported on creep in nickel and nickel-base alloys, and Yu. P. Romashkin, suggested that the dependence of the energy of activation of creep on defor-

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